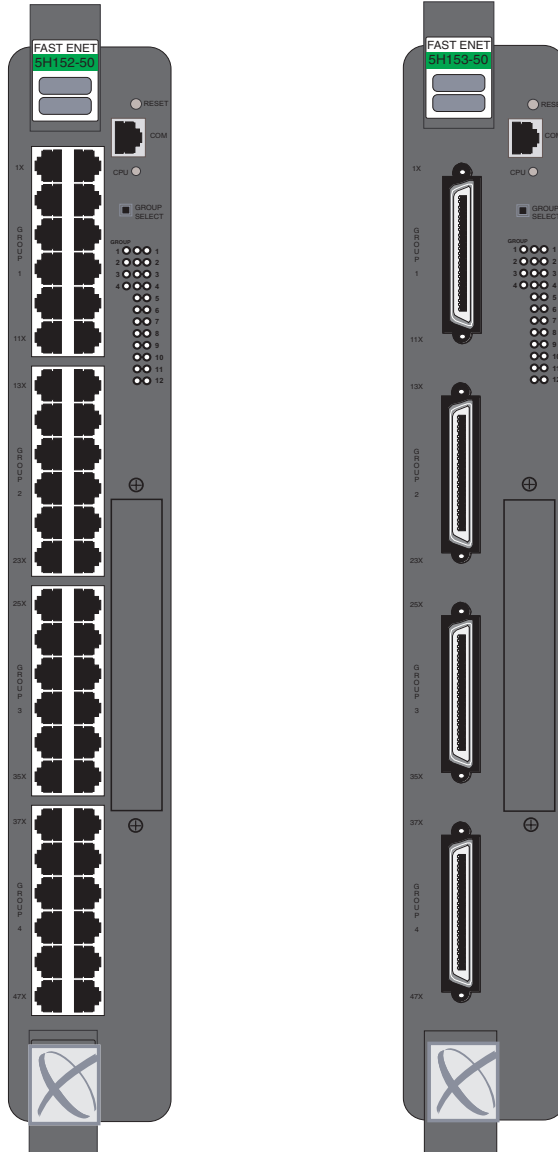


5H152-50 and 5H153-50

Fast Ethernet Modules

Installation Guide





ELECTRICAL HAZARD: Only qualified personnel should perform installation procedures.

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The Class 1 laser transceivers use an optical feedback loop to maintain Class 1 operation limits. This control loop eliminates the need for maintenance checks or adjustments. The output is factory set, and does not allow any user adjustment. Class 1 Laser transceivers comply with the following safety standards:

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- IEC Publication 825 (International Electrotechnical Commission).
- CENELEC EN 60825 (European Committee for Electrotechnical Standardization).

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SAFETY INFORMATION

CLASS 1 LASER TRANSCEIVERS

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When the connector is in place, all laser radiation remains within the fiber. The maximum amount of radiant power exiting the fiber (under normal conditions) is -12.6 dBm or 55×10^{-6} watts.

Removing the optical connector from the transceiver allows laser radiation to emit directly from the optical port. The maximum radiance from the optical port (under worst case conditions) is 0.8 W cm^{-2} or $8 \times 10^3 \text{ W m}^{-2} \text{ sr}^{-1}$.

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Conformance to Directive(s)/Product Standards: **EC Directive 89/336/EEC**
EC Directive 73/23/EEC
EN 55022
EN 55024
EN 60950
EN 60825

Equipment Type/Environment: **Networking Equipment, for use in a Commercial**
or Light Industrial Environment.

Enterasys Networks Inc. declares that the equipment packaged with this notice conforms to the above directives.

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About This Guide

Welcome to the *5H152-50 and 5H153-50 Modules Installation Guide*. This guide provides the network requirements, installation, and troubleshooting information for the following:

- Fast Ethernet modules, 5H152-50 and 5H153-50
- Optional Port Interface (Gigabit) Modules, 5PIM-G02 and 5PIM-G06
- Optional Gigabit Port Interface Modules, GPIM-01, GPIM-08, and GPIM-09

For information about how to use Local Management to configure and manage the 5H152-50 and 5H153-50 module, refer to the *MATRIX E5 Series Modules Local Management User's Guide*.

Important Notice

Depending on the firmware version used in the module, some features described in this document may not be supported. Refer to the Release Notes shipped with the module to determine which features are supported.

USING THIS GUIDE

Read through this guide to completely understand the module capabilities and how to install the modules.

A general working knowledge of Ethernet and IEEE 802.3 type data communications networks and their physical layer components is helpful when using this module.



NOTE: In this document, the 5H152-50 or 5H153-50 may be referred to as either the “switch,” or the “module.” When information applies to a specific module, the module will be referred to by its name.

STRUCTURE OF THIS GUIDE

This guide is organized as follows:

This chapter provides preliminary information to aid in using this manual, lists technology and user guides that may help the user set up and manage the module, and gives instructions on how to get help.

Chapter 1, **Introduction**, provides an overview of the modules and their features.

Chapter 2, **Network Requirements**, outlines the network requirements that must be met before installing the module.

Chapter 3, **Installation**, provides instructions on how to install and connect segments to the module and any installed option.

Chapter 4, **Troubleshooting**, describes the function of the LANVIEW LEDs, which can help to quickly diagnose network/operational problems.

Appendix A, **Specifications**, contains information on port operating specifications, connector pinouts, environmental requirements, and physical properties for the 5H152-50 and 5H153-50 and the optional port interface modules 5PIM-G02 and 5PIM-G06.

Appendix B, **Mode Switch Bank Settings**, describes how to set the Mode Switch.

Appendix C, **GPIM Specifications**, lists the specifications and regulatory requirements for the optional Gigabit Port Interface Modules (GPIM-01, GPIM-08, and GPIM-09) and the media they support.

RELATED DOCUMENTS

The following documents can help in setting up and managing the module:

- *MATRIX E5 Series Modules Local Management User's Guide*
- *5C105 MATRIX E5 Overview and Setup Guide*
- *Ethernet Technology Guide*
- *Cabling Guide*

The manuals listed above can be obtained from the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the following site:

<http://www.enterasys.com/support/manuals>

DOCUMENT CONVENTIONS

The guide uses the following conventions:



NOTE: Calls the reader's attention to any item of information that may be of special importance.



TIP: Conveys helpful hints concerning procedures or actions.



CAUTION: Contains information essential to avoid damage to the equipment.



ELECTRICAL HAZARD: Warns against an action that could result in personal injury or death due to an electrical hazard.



WARNING: Warns against an action that could result in personal injury or death.

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- The serial and revision numbers of all involved Enterasys Networks products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

Introduction

This chapter introduces the 5H152-50 and 5H153-50 Fast Ethernet modules.

Important Notice

Depending on the firmware version used in the module, some features described in this document may not be supported. Refer to the Release Notes shipped with the module to determine which features are supported.

The 5H152-50 module ([Figure 1-1](#)) features 48 10BASE-T/100BASE-TX switched ports connected through 48 fixed RJ45 front panel connectors. There is also a slot for an optional 5PIM-G02 or 5PIM-G06 gigabit uplink interface.

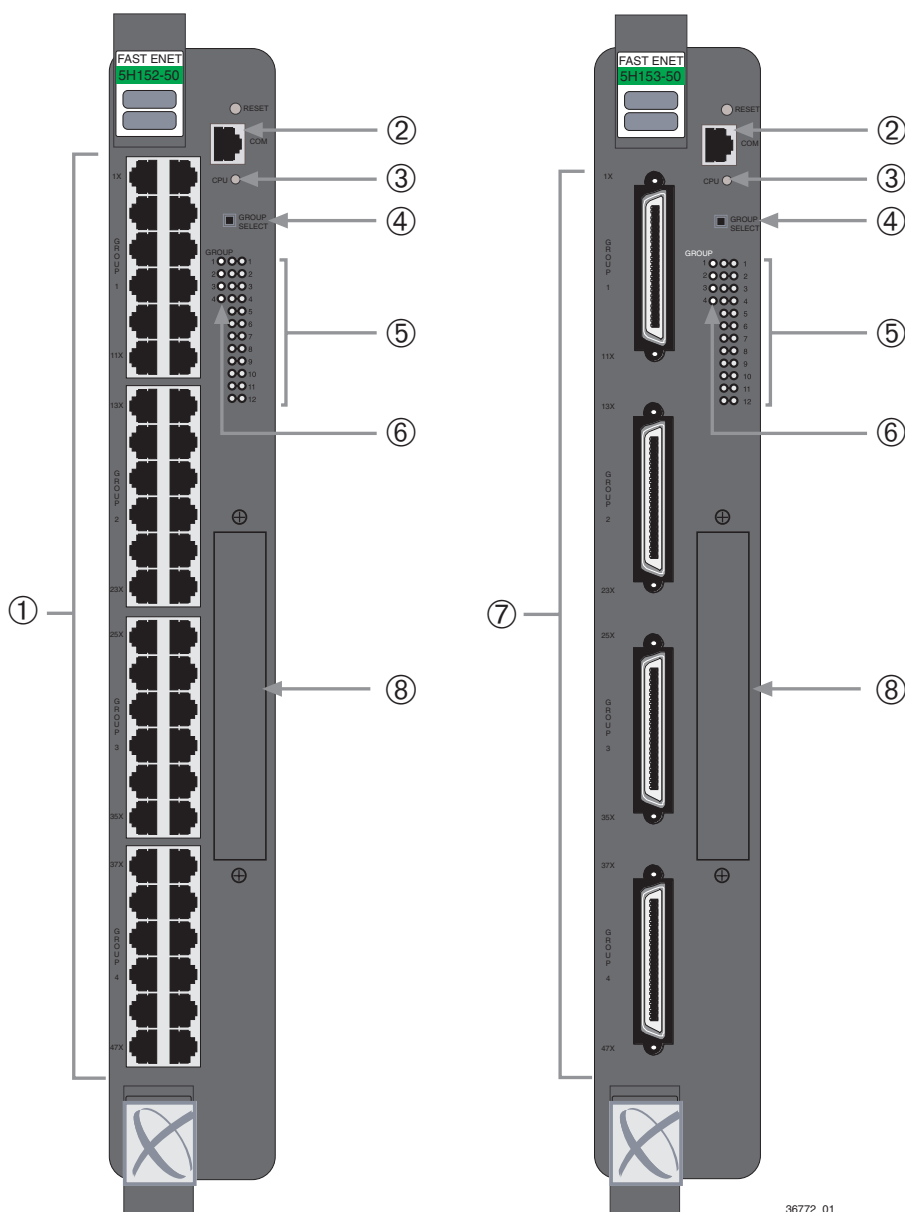
The 5H153-50 module ([Figure 1-1](#)) features 48 10BASE-T/100BASE-TX switched ports connected through 4 fixed RJ21 front panel connectors. There is also a slot for an optional 5PIM-G02 or 5PIM-G06 gigabit uplink interface.

Each of the fixed front panel ports can operate in either half-duplex or full-duplex mode of operation, as determined by auto-negotiation. Full-duplex can also be manually configured.

The module ports can be configured to control traffic in several ways, including prioritizing traffic flow according to protocol type. The module can also be configured to establish 802.1Q Virtual Local Area Networks (VLANs) and control the flow of frames associated with each VLAN according to priority and Ether type. Detailed information about VLANs is provided in the *MATRIX E5 Series Modules Local Management User's Guide*.

The module receives power and backplane connectivity when it is inserted into a 5C105 MATRIX E5 chassis.

Figure 1-1 The 5H152-50 and 5H153-50 Modules



36772_01

- | | | |
|-----------------------------|-----------------------|-----------------------------|
| ① RJ45 Network Ports 1 - 48 | ④ Group Select Switch | ⑦ RJ21 Network Ports 1 - 48 |
| ② COM Port | ⑤ Port Status LEDs | ⑧ 5PIM option slot |
| ③ System LED | ⑥ Group Select LEDs | |

1.1 CONNECTIVITY

The 5H152-50 and 5H153-50 modules connect to Ethernet networks or workstations through the front panel connectors. The ports support Unshielded Twisted Pair (UTP) cables with an impedance between 85 and 111 ohms at lengths up to 100 meters. The ports are IEEE 802.3 10BASE-T and 100BASE-TX compliant.

Both of the 5H152-50 and 5H153-50 modules have a port slot that supports either a 5PIM-G02 or 5PIM-G06 gigabit-uplink interface module.

1.1.1 About the Optional 5PIM-G02

The 5PIM-G02 has two fixed RJ45 Gigabit Ethernet ports that comply to the 1000BASE-T standard. These ports support Category 5 or higher UTP cable for 1-Gbps uplinks.

1.1.2 About the Optional 5PIM-G06

The 5PIM-G06 has two port slots that support optional Gigabit Port Interface Modules (GPIMs) for fiber optic uplinks. The fiber optic cable connection is dependent on the model of the GPIM.

1.1.3 About the Optional GPIM

The GPIMs are hot swappable and any combination of GPIMs can be installed in the 5PIM-G06. There are three available GPIMs (GPIM-01, GPIM-08, and GPIM-09) to make the following fiber optic uplink connections to a Gigabit Ethernet network.



NOTE: The acronym “GPIM” stands for Gigabit (Ethernet) Port Interface Module. In this manual, GPIM is used to designate any type of GPIM, regardless of the style of connection. When referring to a specific GPIM, the name is used, e.g., GPIM-01.

In the networking industry, Gigabit (Ethernet) Interface Card (GBIC) is the standard term for GPIM.

The GPIM options for the 5PIM-G06 are summarized in [Table 1-1](#). Refer to the firmware Release Notes for any changes or additions to this information. For more detailed specifications on the GPIMs, refer to [Appendix C](#).

Table 1-1 GPIM Options

Part Number	Fiber Optic Connection	Application
GPIM-01	SC	Supports the 1000BASE-SX standard for a 50 or 62.5 micron multimode fiber optic cable connection.
GPIM-08	SC	Supports the 1000BASE-SX standard for a 10 micron single-mode fiber optic cable connection.
GPIM-09	SC	Supports the 1000BASE-SX standard for a 10 micron single-mode, or the 1000BASE-LX long-haul standard for a 50 or 62.5 micron multimode fiber optic cable connection.

1.2 HALF-DUPLEX/FULL-DUPLEX AUTO-NEGOTIATION

The fixed front panel ports on the module have the ability to auto-negotiate the ports’ mode of operation (half-duplex or full-duplex) between two devices according to IEEE 802.3 standards. During Auto-Negotiation, two devices automatically exchange information “telling” each other their current operating mode. The Auto-Negotiation feature targets the maximum capability that can be reached between the two devices. For example, the module can adjust to full-duplex operation when the device on the other end of the connection can also adjust from half-duplex to full-duplex. If the device on the other end of the connection can only operate in half-duplex mode, then the module simply adjusts to operate in half-duplex mode.

1.3 PORT TRUNKING

Port Trunking is used for load balancing or load sharing. Port Trunking provides a mechanism to group, or aggregate, multiple links of any technology together to scale the backbone bandwidth beyond the limitations of a single link. All links are user-configurable so administrators can scale the backbone bandwidth by adding Port Trunking. The benefits of Port Trunking include the following:

- All purchased bandwidth is used.
- Distributed, resilient links increase reliability and performance.
- Multiple technologies are supported within a single trunk for maximum flexibility.

1.4 REMOTE MONITORING (RMON)

The module supports the 1, 2, 3, and 4 Ethernet RMON groups. The Statistics, Alarms, Events, and History groups are enabled on all ports by default.

The Enterasys Networks RMON Actions is a vendor-specific extension of RMON and provides the ability to set an “Action” on any SNMP MIB variable. The Action can be triggered by any RMON Event and/or Alarm. An example of an Action would be to turn off a MIB-2 interface if a broadcast threshold is crossed.

1.5 PORT/VLAN REDIRECT FUNCTION

The port redirect function, also referred to as “Port Mirroring,” is a troubleshooting tool used to map traffic from a single source port to a single destination port within the module. This feature allows frames, including those with errors, to be copied and sent to an analyzer or RMON probe. The analyzer or RMON probe will see the data as if it were directly connected to the LAN segment of the source port.

The VLAN redirect function is similar to the port redirect function except that the frames received by the module are redirected to a designated destination port according to the VLAN classification of the frames received. Multiple VLANs can be directed to the same destination port. The VLAN redirect function is only supported when the module is operating as an 802.1Q switch.

1.6 FLOW CONTROL

Flow control is a method of managing the flow of frames between two devices. It ensures that a transmitting device does not overwhelm a receiving device with data. This is accomplished by the transmitting device pausing its transmission while the receiving device processes the frames already received.

The module supports frame-based 802.3x flow control. Frame-based 802.3x flow control is supported on all Ethernet ports operating in the full-duplex mode. Flow control can be enabled or disabled on a port-by-port basis.

Back pressure flow control is not supported on ports operating in the half-duplex mode.

1.7 802.1p PORT PRIORITY

The 802.1p port priority is used to assign a default priority to the frames received without priority information in their tag header, map prioritized frames to the appropriate transmit queues, and prioritize frames according to protocol type. The 802.1p port priority is part of the IEEE 802.1D standard.

1.8 MANAGEMENT

Management of the module can be either in-band or out-of-band. In-band remote management is possible through any SNMP-compliant Network Management Software, such as the Enterasys Networks' NetSight™ management product. In-band management using Telnet and Enterasys Networks' Webview™ is also provided. Out-of-band Local Management is provided through the RJ45 COM port on the front panel using a VT100 terminal or a VT100 terminal emulator.

Local Management provides the ability to manage the module. Refer to the *MATRIX E5 Series Modules Local Management User's Guide* for more information.

1.9 SWITCHING OPTIONS

The module provides 802.1Q switching between all of the front panel interfaces. In the 802.1Q mode (the default mode of operation), the module functions as an 802.1D switch until you configure VLANs. Up to 1024 VLANs can be configured.

IEEE 802.1Q switching allows migration to Virtual Network technologies without requiring the replacement of existing equipment.

1.10 STANDARDS COMPATIBILITY

The 5H152-50 and 5H153-50 modules are fully compliant with the IEEE 802.3, 802.3u, 802.3x, 802.1D, and 802.1Q standards. The modules provide IEEE 802.1D Spanning Tree Algorithm (STA) support to enhance the overall reliability of the network and protect against “loop” conditions. The modules support a wide variety of industry standard MIBs including RFC 1213 (MIB II), RFC 1757 (RMON), and RFC 1493 (Bridge MIB). A full suite of Enterasys Networks Enterprise MIBs provide a wide array of statistical information to enhance troubleshooting. For information on how to extract and compile individual MIBs, contact Enterasys Networks.

1.11 LANVIEW DIAGNOSTIC LEDs

LANVIEW diagnostic LEDs serve as an important troubleshooting aid by providing an easy way to observe the status of individual ports and overall network operations.

Network Requirements

Before installing the module, review the requirements and specifications referred to in this chapter concerning the following:

- Port Trunking ([Section 2.1](#))
- 10BASE-T Twisted Pair Network ([Section 2.2](#))
- 100BASE-T Twisted Pair Network ([Section 2.3](#))
- 1000BASE-T Network (5PIM-G02) ([Section 2.4](#))
- 1000BASE-SX/LX Network (5PIM-G06) ([Section 2.5](#))

The network installation must meet the requirements to ensure satisfactory performance of this equipment. Failure to do so will produce poor network performance.



NOTE: The *MATRIX E5 Series Modules Local Management User's Guide* and *Cabling Guide*, referred to in the following sections, can be found on the Enterasys Networks World Wide Web site: <http://www.enterasys.com/>

2.1 PORT TRUNKING FEATURE

Before connecting the module to a network so it can take advantage of the Port Trunking feature, there are certain rules concerning port connections and configurations that must be followed for proper operation. Refer to the *MATRIX E5 Series Modules Local Management User's Guide* for additional information.

2.2 10BASE-T NETWORK

When connecting a 10BASE-T segment to any of the module ports (1 through 48), ensure that the network meets the Ethernet network requirements of the IEEE 802.3 standard for 10BASE-T. Refer to the *Cabling Guide* for details.



NOTE: If a port is to operate at 100 Mbps, Category 5 cabling must be used. Category 3 cabling does not meet 100 Mbps specifications. For 10 Mbps operation only, Category 3 or Category 5 cabling can be used. Refer to [Section 2.3](#) for information about 100BASE-TX networks and cabling.

2.3 100BASE-TX NETWORK

The fixed front panel ports (1 through 48) of the module also provide a connection that supports Category 5 UTP cabling. The device at the other end of the twisted pair segment must meet IEEE 802.3u 100BASE-TX Fast Ethernet network requirements for the devices to operate at 100 Mbps. Refer to the *Cabling Guide* for details.



NOTE: The fixed ports of the module support Category 5 UTP cabling with an impedance between 85 and 111 ohms for 100 Mbps operation.

The module is capable of operating at either 10 or 100 Mbps. The module automatically senses the speed of the other device and adjusts its speed accordingly.

2.4 1000BASE-T NETWORK (5PIM-G02)

The fixed front panel ports on the 5PIM-02 provide copper wire connections that can operate at 1000 Mbps (1 Gbps) and are 1000BASE-T compliant. The device at the other end of the copper connection must also meet the 1000BASE-T Gigabit Ethernet requirements for the devices to operate at Gigabit speed.

2.5 1000BASE-SX/LX NETWORK (5PIM-G06)

The optional GPIMs (GPIM-01, GPIM-08, or GPIM-09) for the 5PIM-G06 ports 1 and 2 provide a Gigabit Ethernet connection that supports fiber connections operating at 1000 Mbps (1 Gbps). Other GPIMs may support different types of cabling connections. The device at the other end of the fiber connection must meet IEEE 802.3z Gigabit Ethernet requirements for the devices to operate at Gigabit speed. Refer to [Appendix C](#) for further details on GPIM specifications.

Installation



ELECTRICAL HAZARD: Only qualified personnel should install the module.



NOTE: Read the Release Notes shipped with the module to check for any exceptions to the supported features and operation documented in this guide.

This chapter provides the instructions to install the 5H152-50 and 5H153-50 modules and optional 5PIM-02 and 5PIM-G06 port interface modules. The installation procedures for installing optional GPIMs in the 5PIM-G06 are also provided.

A Phillips screwdriver is required to install options into the module. Follow the order of the sections listed below to correctly install the module.

- Unpacking the Module ([Section 3.1](#))
- Installing Optional 5PIMs ([Section 3.2](#))
- Installing Optional GPIMs ([Section 3.3](#))
- Installing the Module into the 5C105 MATRIX E5 Chassis ([Section 3.4](#))
- Connecting to the Network ([Section 3.5](#))
- Connecting Fiber Optic Cables to GPIMs ([Section 3.6](#))
- Completing the Installation ([Section 3.7](#))

3.1 UNPACKING THE MODULE

Unpack the module as follows:

- 1. Open the box and remove the packing material protecting the module.
- 2. Verify the contents of the carton as listed in [Table 3-1](#).

Table 3-1 Contents of Module Carton

Item	Quantity
One module, either the 5H152-50 or the 5H153-50	1
Antistatic Wrist Strap	1
Manual Accessory Kit	1

- 3. Remove the tape seal on the non-conductive bag to remove the module.
- 4. Perform a visual inspection of the module for any signs of physical damage. Contact Enterasys Networks if there are any signs of damage. Refer to “[Getting Help](#)” in **About This Guide** for details.
- 5. If you are installing an optional 5PIM in the module, the 5PIM must be installed before installing the module into the E5 chassis. To install the 5PIM, proceed to [Section 3.2](#) for instructions.

3.2 INSTALLING OPTIONAL 5PIMs



NOTE: Install any optional equipment before proceeding to [Section 3.4](#).

At the time of this printing, two port interface module options (5PIM-G02 and 5PIM-G06) were available for the 5H152-50 and 5H153-50. Refer to your release notes for the latest available optional interfaces.

The 5PIM-G02 provides two fixed, 1-Gigabit, port uplinks via twisted pair RJ45 connections.

The 5PIM-G06 provides two port slots for fiber optic, 1-Gigabit, port uplinks via optional GPIMs.

Installing a 5PIM involves

- removing the coverplate on the module,
- attaching the 5PIM to the module, and
- installing the GPIMs, if the 5PIM is a 5PIM-G06.



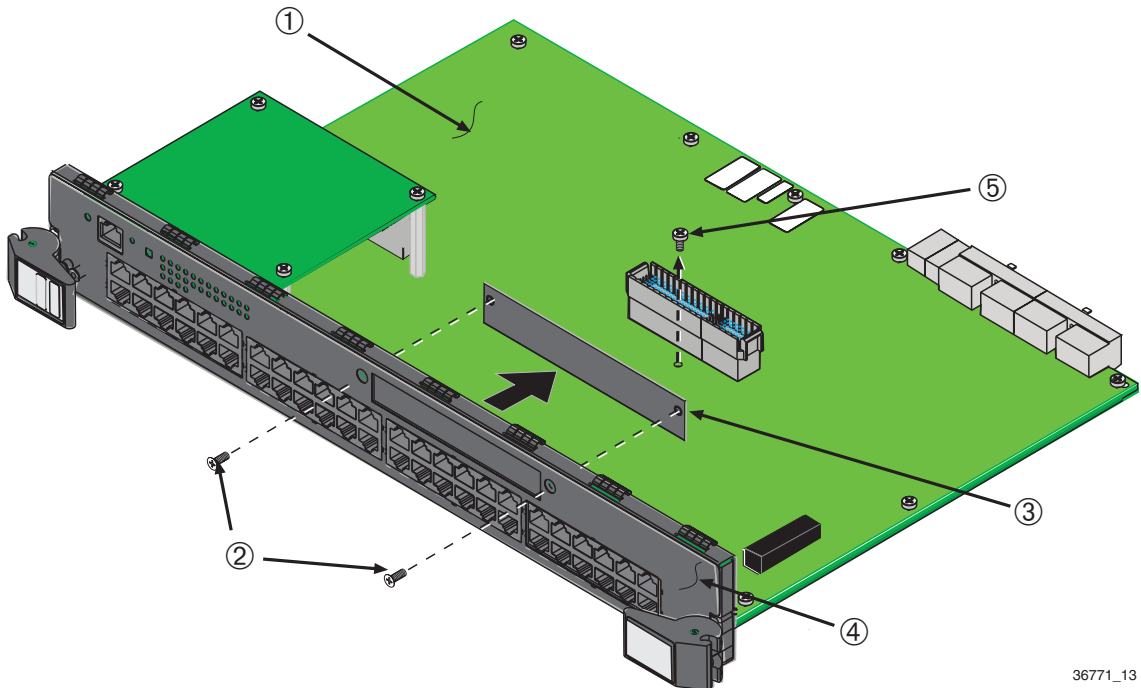
CAUTION: An antistatic wrist strap is required (provided with the module) to perform the following procedures to minimize ESD damage to the devices involved.

3.2.1 Removing the Coverplate

Refer to [Figure 3-1](#) and proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions on the antistatic wrist strap package).
2. Place the module ① on an antistatic pad on a sturdy flat surface.

Figure 3-1 Removing the Coverplate



36771_13

- | | | |
|-------------------------|----------------------|-------------------|
| ① Module | ③ Coverplate | ⑤ Fastening screw |
| ② Coverplate screws (2) | ④ Module front panel | |

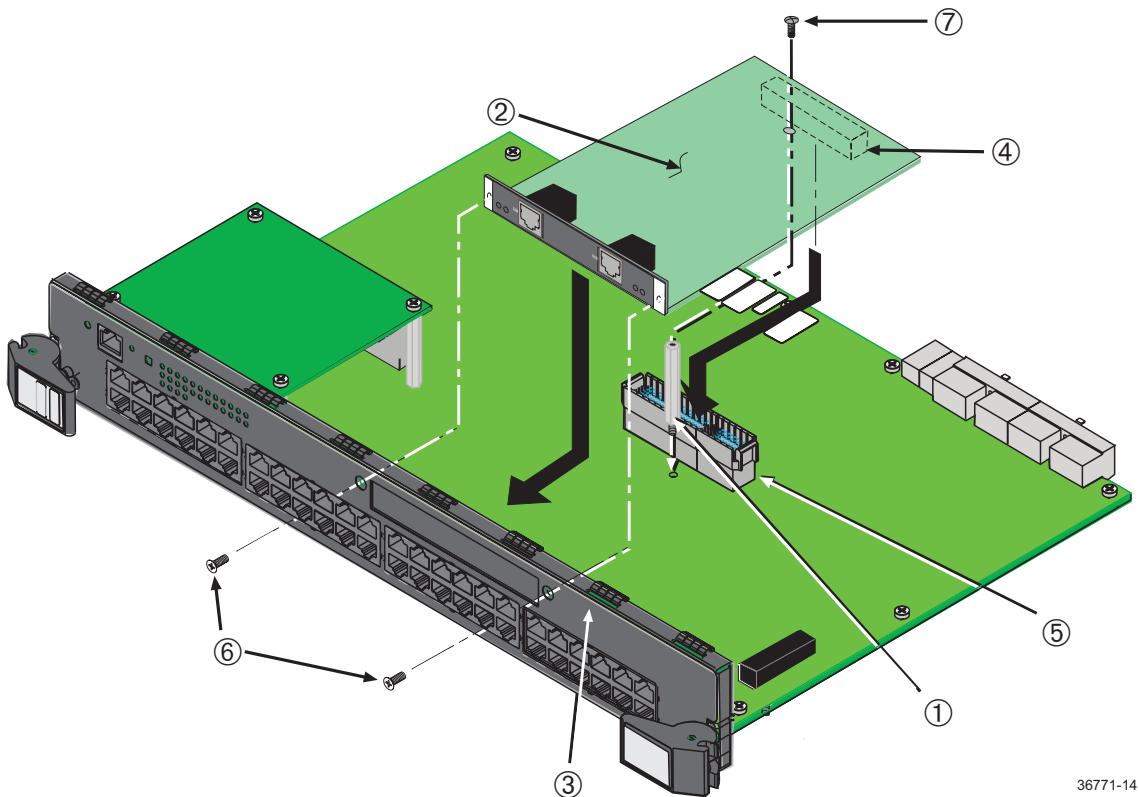
3. Remove the two screws ② fastening the coverplate ③ to the module front panel ④. Save the two screws for installing the 5PIM.
4. Remove the screw ⑤ fastening the board to the module chassis. Save the screw for installing the 5PIM.

3.2.2 Installing the 5PIM

Refer to [Figure 3-2](#) and proceed as follows:

1. Locate the standoff ① shipped with the 5PIM ② and screw it in place of the screw previously removed from the board. Tighten the screw.
2. Position the 5PIM ② so its front panel is under the edge of the module front panel ③.
3. Carefully align 5PIM connector ④ with the module connector ⑤. Then press straight down over the 5PIM connector, applying pressure until it is properly seated into the module connector.

Figure 3-2 Installing the 5PIM



36771-14

- | | | |
|----------------------|--------------------|-------------------------|
| ① Standoff | ④ 5PIM connector | ⑥ Coverplate screws (2) |
| ② 5PIM | ⑤ Module connector | ⑦ Standoff screw |
| ③ Module front panel | | |

4. Use the two saved coverplate screws ⑥ to fasten the 5PIM ② to the module front panel ③. Do not tighten screws.
5. Fasten the 5PIM ② to the standoff ① using the last saved screw ⑦. Do not tighten screw.
6. Now tighten the two coverplate screws ⑥ first and then the standoff screw ⑦.
7. This completes the 5PIM installation. If you installed a 5PIM that accepts GPIMs, proceed to [Section 3.3](#) for the GPIM installation instructions. Otherwise, proceed to [Section 3.4](#) to install the module into the chassis.

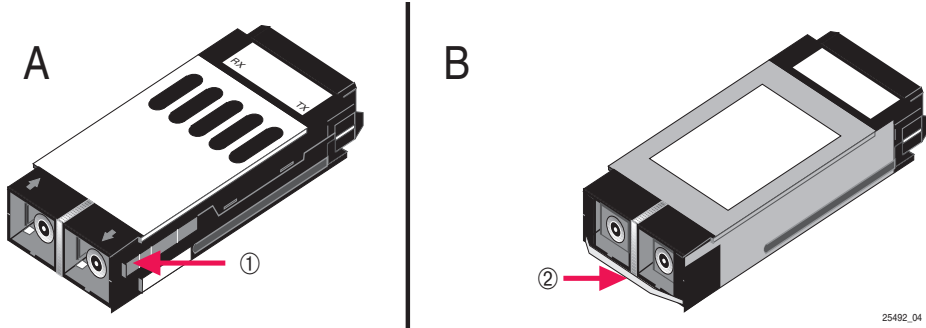
3.3 INSTALLING OPTIONAL GPIMs

The optional GPIMs are hot-swappable and may be installed into the 5PIM-G06 before or after the module (host module) is installed into the chassis. However, for convenience in a new installation, it is recommended that you install GPIMs before installing the module in the chassis. In either case, use the following installation instructions to prevent damaging either the GPIM or the host 5PIM-G06.

There are two different physical styles of GPIMs that can be installed into the module, as shown in [Figure 3-3](#). One style has the squeeze-latch side clips ([Figure 3-3](#), view A); refer to [Section 3.3.1](#) for the installation procedure. The other style has the locking bar ([Figure 3-3](#), view B); refer to [Section 3.3.2](#) for the installation procedure.



CAUTION: The GPIM, 5PIM and module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the GPIM, 5PIM, or module. Always leave the GPIM in the antistatic bag in which it was shipped or an equivalent antistatic container until ready to install it.

Figure 3-3 Different Physical Styles of GPIMs

① Side clip

② Locking bar

After installing a GPIM, refer to [Section 3.6](#) for details on connecting the GPIM to the network.

3.3.1 Side Clip GPIMs

This section applies only to side clip GPIMs. Damage can result to the GPIM and host 5PIM if the directions in this section are not followed carefully.

Refer to [Appendix C](#) for cable specifications for the GPIMs.



CAUTION: The GPIM, 5PIM, and module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the GPIM, 5PIM, or module. Always leave the GPIM in the antistatic bag in which it was shipped or an equivalent antistatic container until ready to install it.

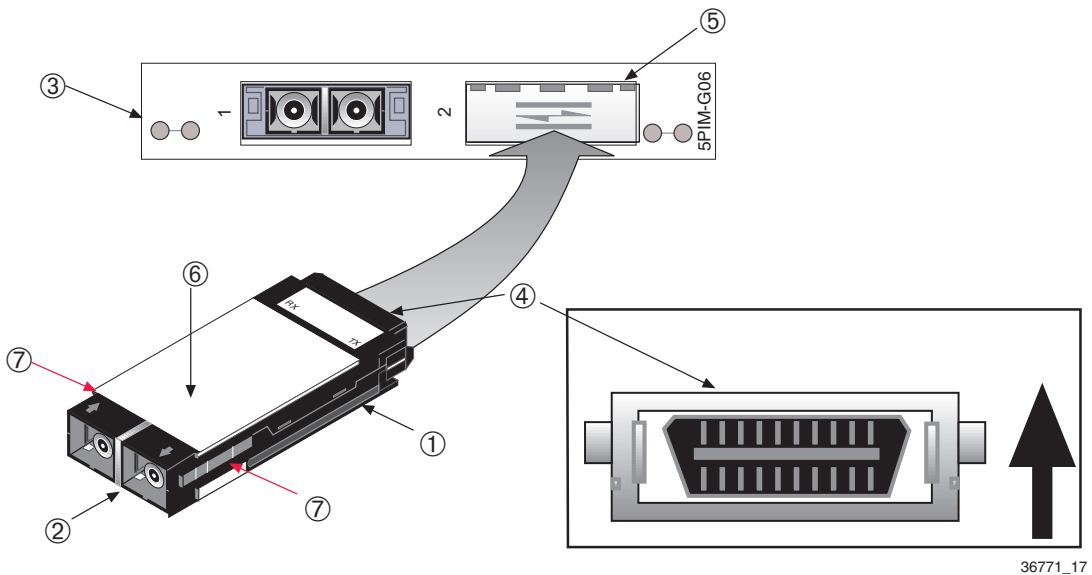
3.3.1.1 Installing the Side Clip GPIM

To install the GPIMs, refer to [Figure 3-4](#) and proceed as follows:

1. Attach the antistatic strap (refer to the instructions in the antistatic wrist strap package) before removing the GPIM from the antistatic packaging.
2. Remove the GPIM ① from the packaging.

3. Hold the GPIM ① with the network port ② on the insertion end (not shown) facing away from the 5PIM ③. The 20-pin connector ④ should be facing towards the empty GPIM slot, with the wide part of the 20-pin connector oriented up in relation to the printing on the 5PIM. See [Figure 3-4](#) to orient the GPIM 20-pin connector.
4. Carefully insert the GPIM (20-pin connector side) into the port slot ⑤ of the GPIM. The top ⑥ of the GPIM must be next to the hinge side of the slot door of the module. The door folds up and the slides in the port slot engage the sides of the GPIM. If the GPIM does not insert easily, do not force it. Check the orientation against [Figure 3-5](#). Push the GPIM back until the 20-pin port engages the GPIM. The locking tabs ⑦ engage when the GPIM connector seats properly in the port.

Figure 3-4 Installing a Side Clip GPIM into the 5PIM



36771_17

-
- | | |
|------------------------------------|-----------------------|
| ① GPIM with side clip | ⑤ Hinged side of door |
| ② Network connection end | ⑥ Top of GPIM |
| ③ 5PIM | ⑦ Locking tabs |
| ④ 20-Pin connector (insertion end) | |
-

3.3.1.2 Removing the Side Clip GPIM



CAUTION: Do NOT remove a GPIM from a slot without unlocking the tabs. This can damage the GPIM.

The GPIM, 5PIM and module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the GPIM, 5PIM or module. Always leave the GPIM in the antistatic bag or an equivalent antistatic container when not installed.

To remove the GPIM from a 5PIM, proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the GPIM.
2. Remove any cables connected to the GPIM.
3. Refer back to [Figure 3-4](#). Locate the locking tabs ⑦ on the sides of the GPIM ①.
4. Squeeze both locking tabs ⑦ in towards the center of the GPIM ① and hold; then pull the GPIM out of the port.
5. If storing or shipping the GPIM, insert the dust protector into the GPIM to protect the fiber ports.

3.3.2 Locking Bar GPIMs

This section describes how to install and remove GPIMs that are equipped with a metal locking bar.

Refer to [Appendix C](#) for cable specifications for the GPIMs.



CAUTION: This section applies only to GPIMs equipped with a metal locking bar. Damage can result to the GPIM and 5PIM if the directions in this manual are not followed carefully.

The GPIM, 5PIM, and module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the GPIM, 5PIM, or module. Always leave the GPIM in the antistatic bag or an equivalent antistatic container when not installed.

3.3.2.1 Installing the Locking Bar GPIM

Prepare and install the GPIM into the 5PIM, as follows:

Preparation

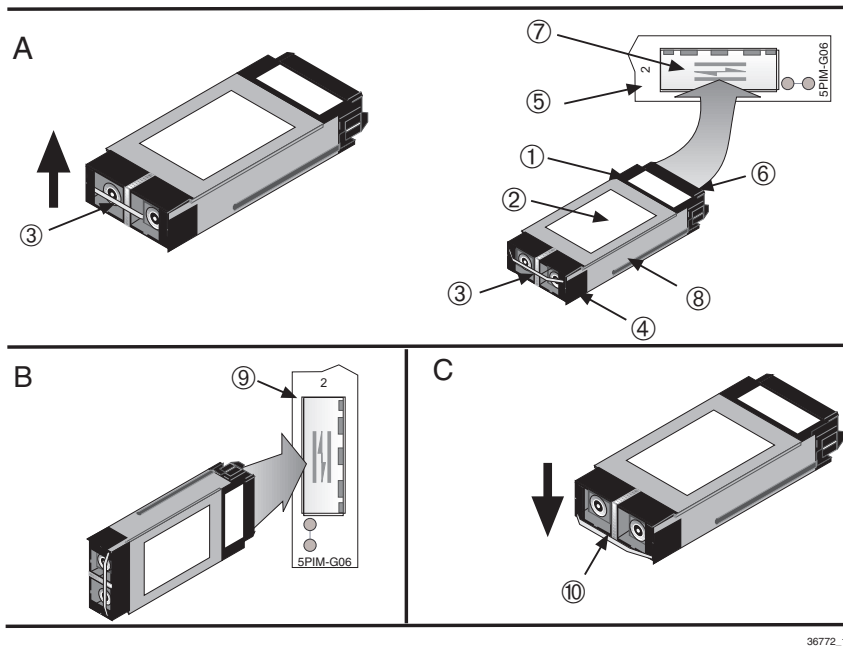
Before installing the GPIM, proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the GPIM from the antistatic packaging.
2. Remove the GPIM from the packaging.
3. If there is a protective dust cover on the port, remove it from the GPIM.

Installation

To install the GPIM, refer to [Figure 3-5](#) (Views A, B, and C) and proceed as follows:

1. Hold the GPIM ① with the top of the body ② facing up, as shown in View A.

Figure 3-5 GPIM Metal Locking Bar Positions

36772_16

- | | |
|---|---|
| ① GPIM | ⑥ 20-Pin connector (insertion side) |
| ② Top of GPIM | ⑦ 5PIM slot |
| ③ Metal locking bar (up position, unlocked) | ⑧ Alignment slots |
| ④ Network port | ⑨ 5PIM (installed in chassis) |
| ⑤ 5PIM (Not installed in chassis) | ⑩ Metal locking bar (down position, locked) |

2. Lift the GPIM metal locking bar ③ upwards as far as it can go as shown in View A.
3. Hold the GPIM ① with the network port ④ facing away from the 5PIM ⑤. The 20-pin connector ⑥ should be facing towards the empty 5PIM slot ⑦.
4. Align the GPIM alignment slots ⑧ with the alignment guides inside the 5PIM slot ⑦. The top of the GPIM must be adjacent to the door hinge of the 5PIM slot door.
5. Carefully insert the GPIM ① (20-pin connector side) into the 5PIM slot opening ⑦. The door folds in and the slides engage the slots on the sides of the GPIM. If the GPIM does not go in easily, do not force it into the slot. If it is not oriented correctly, it will stop about one quarter of the way into the slot, and should not be forced any further. Check the orientation against [Figure 3-5](#). Remove and reorient the GPIM so that it slides easily into the slot.

6. Push the GPIM ① back until the 20-pin connector port ⑥ engages with the connector in the 5PIM slot ⑦.
7. Once the GPIM 20-pin connector ⑥ has been firmly seated into the module, push down on the GPIM metal locking bar ⑩ until it clicks into place as shown in View B. Do NOT force the locking bar into the locked position. If there is significant resistance while attempting to close the locking bar, remove the GPIM. Inspect it for any problems with the connectors. If there are any problems, contact Enterasys Networks for technical support (refer to “[Getting Help](#)” in **About This Guide**). If there are no problems, re-insert the GPIM carefully, and firmly seat the GPIM in the connector of the 5PIM.

3.3.2.2 Removing the Locking Bar GPIM



CAUTION: Do NOT remove a GPIM from a slot without unlocking the metal locking bar. This can damage the GPIM.

The GPIM, 5PIM, and module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damaging the GPIM, 5PIM, or module. Always leave the GPIM in the antistatic bag or an equivalent antistatic container when not installed.

To remove a GPIM from its slot in a 5PIM, proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the GPIM.
2. Remove any cables or dust protectors connected to the GPIM.
3. Refer to [Figure 3-5](#). Locate the metal locking bar ⑩ in its locked position on the front of the GPIM.
4. Lift the metal locking bar ⑩ upwards as far as it will go. See [Figure 3-5](#), View A. This unlocks the GPIM clips.
5. While holding the metal locking ⑩ bar in the upwards position, grasp the sides of the GPIM and pull it out of the 5PIM.
6. If storing or shipping the GPIM, insert the dust protector into the GPIM to protect the fiber ports.

3.4 INSTALLING THE MODULE INTO THE 5C105 CHASSIS



CAUTION: Failure to observe static safety precautions could cause damage to the module. Follow static safety handling rules and wear the antistatic wrist strap provided with the 5C105 Chassis.

Do not cut the non-conductive bag to remove the module. Sharp objects contacting the board or components can cause damage.

To install a module, refer to [Figure 3-6](#) and proceed as follows:

1. Remove the blank panel covering the slot in which the module will be installed. All other slots must remain covered to ensure proper airflow and cooling. (Save the blank plate in the event you need to remove the module.)
2. Carefully remove the module from the shipping box. (Save the box and packing materials in the event the module must be reshipped.)
3. Locate the antistatic wrist strap shipped with the module. Attach the antistatic wrist strap to your wrist and plug the cable from the antistatic wrist strap into the ESD grounding receptacle at the upper right corner of the chassis.
4. Remove the module from the plastic bag. (Save the bag in the event the module must be reshipped.) Observe all precautions to prevent damage from Electrostatic Discharge (ESD).
5. Examine the module for damage. If any damage exists, DO NOT install the module. Immediately contact Enterasys Networks. Refer to [“Getting Help”](#) in **About This Guide**.

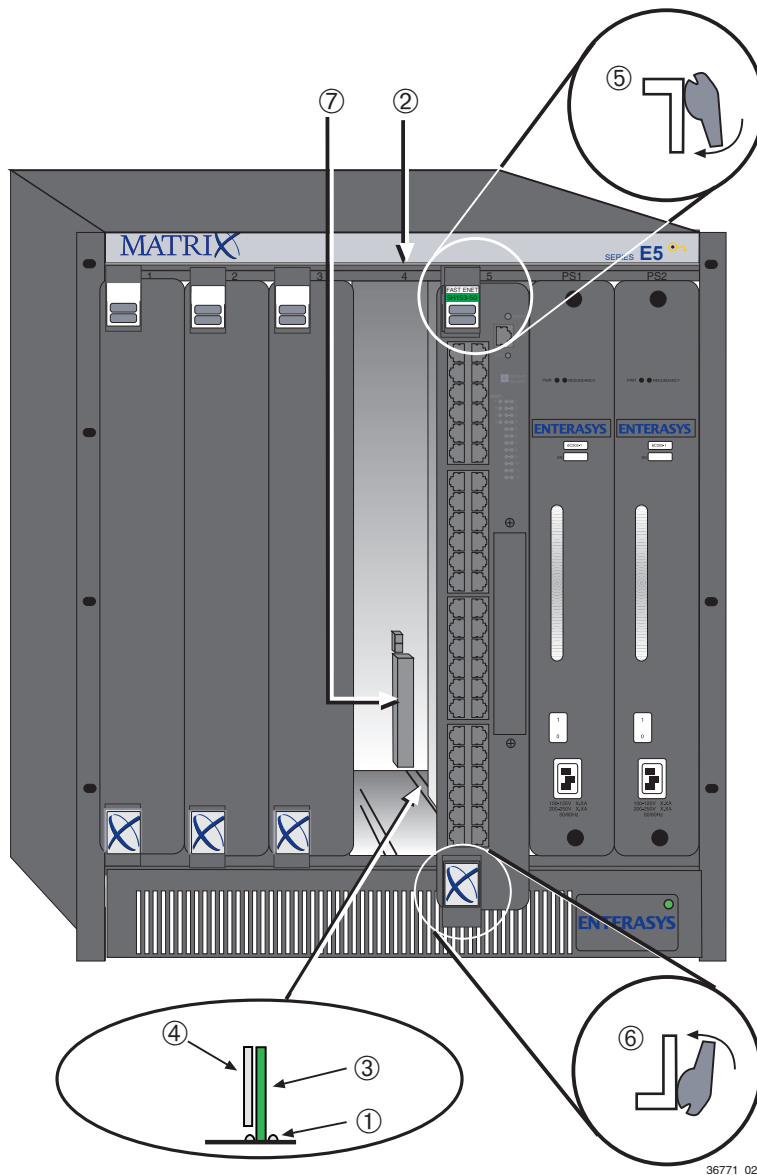


CAUTION: To prevent damaging the backplane connectors in the following step, take care that the module slides in straight and properly engages the backplane connectors.

Ensure that the top plastic locking tab lines up with the desired slot number located on the front panel of the chassis. Refer to [Figure 3-6](#).

6. While referring to [Figure 3-6](#), locate the card guides ① that line up with the slot number ② in which the module card ③ will be installed. Install the module in the chassis by aligning the module card between the upper and lower card guides of the desired slot, sliding it into the chassis, and locking down the top ⑤ and bottom ⑥ plastic locking tabs, as shown in [Figure 3-6](#). Take care that the module slides in straight and properly engages the backplane connectors ⑦.
7. If the chassis in which the module is installed was powered down for the installation, turn it back on. Check to see that the CPU LED settles at solid green after a few minutes. If the LED does not turn solid green, see [Chapter 4](#) for details.

Figure 3-6 Installing a Module into the 5C105 Chassis



- ① Card guides
- ② Slot number
- ③ Module card
- ④ Metal back panel

- ⑤ Upper locking tab
- ⑥ Lower locking tab
- ⑦ Backplane connector

3.5 CONNECTING TO THE NETWORK

This section provides the procedures for connecting unshielded twisted pair (UTP) segments from the network or other devices to the 5H152-50 ([Section 3.5.1](#)), or the 5H153-50 ([Section 3.5.2](#)). For details on how to get manuals, refer to the “[Related Documents](#)” section in **About This Guide**.



NOTE: If the module is being installed in a network using Port Trunking, there are rules concerning the network cable and port configurations that must be followed for Port Trunking to operate properly. Before connecting the cables, refer to the *MATRIX E5 Series Modules Local Management User's Guide* for the configuration information.

3.5.1 Connecting UTP Cables to the 5H152-50

The fixed front panel ports of the 5H152-50 are 10/100 RJ45 ports with internal crossovers. When connecting a workstation to these ports, use a straight-through cable. When connecting networking devices to these ports, such as a bridge, repeater, or router, use a crossover cable.

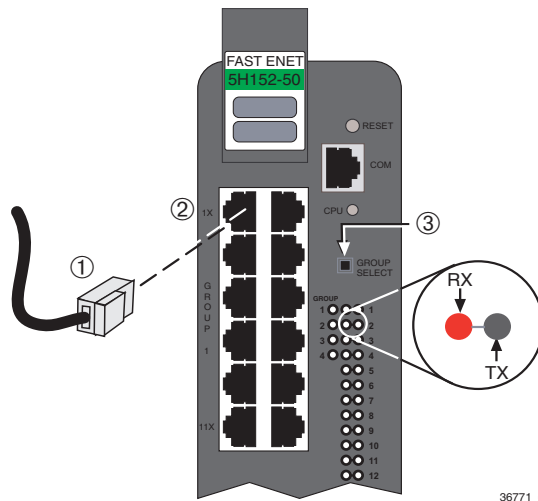


NOTE: All RJ45 front panel ports on the 5H152-50 support Category 5 Unshielded Twisted Pair (UTP) cabling with an impedance between 85 and 111 ohms. Category 3 cable may be used if the connection is going to be used only for 10 Mbps.

Connect a twisted pair segment to the 5H152-50 as follows:

1. Ensure that the device connected to the other end of the segment is powered ON.
2. Refer to [Figure 3-7](#) and connect the twisted pair segment to the 5H152-50 by inserting the RJ45 connector ① on the twisted pair segment into the appropriate RJ45 port connector ②.

Figure 3-7 Connecting a Twisted Pair Segment to the 5H152-50

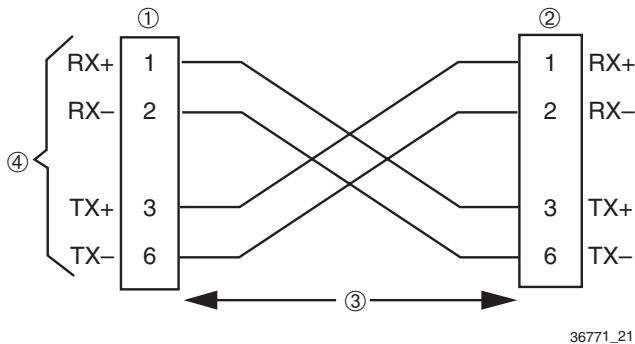


- | | | |
|------------------|-----------------------|-----------------------|
| ① RJ45 connector | ② RJ45 port connector | ③ GROUP SELECT button |
|------------------|-----------------------|-----------------------|

3. Verify that a link exists by checking that the port **RX** (Receive) LED is ON (flashing amber, blinking green, or solid green). If the **RX** LED is OFF and the **TX** (Transmit) LED is not blinking amber, perform the following steps until it is on:
 - a. To view the receive and transmit activity on a group of segments (Groups 1 through 4), press the GROUP SELECT button ③ to step to the group of interest. Each time the GROUP SELECT button is pressed, the GROUP LED lights up in sequence, indicating which Group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.
 - b. Verify that the cabling being used is Category 5 UTP with an impedance between 85 and 111 ohms. If the port is to operate at 100 Mbps, category 5 cabling must be used.
 - c. Verify that the device at the other end of the twisted pair segment is on and properly connected to the segment.

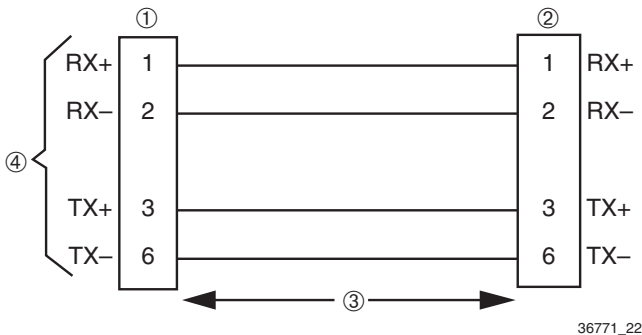
- d. Verify that the RJ45 connectors on the twisted pair segment have the proper pinouts (Figure 3-8 and Figure 3-9) and check the crossover cable ③ for continuity. As shown in Figure 3-8, a crossover cable is normally used between hub devices (e.g., RJ45 switch port and another device port). A straight-through cable is used to connect between switches or hub devices and an end user (computer).

Figure 3-8 Crossover Cable RJ45 Pinouts, Connection Between Hub Devices



- | | |
|---------------------|--|
| ① RJ45 switch port | ③ RJ45-to-RJ45 crossover cable |
| ② Other device port | ④ RX+/RX- and TX+/TX- connections. These connections must share a common color pair. |

Figure 3-9 Straight-Through Cable RJ45 Pinouts, Connections Between Switches and End User



- | | |
|---------------------|--|
| ① RJ45 switch port | ③ RJ45-to-RJ45 straight-through cable |
| ② Other device port | ④ RX+/RX- and TX+/TX- connections. These connections must share a common color pair. |

- e. Ensure that the twisted pair connection meets the dB loss and cable specifications outlined in the *Cabling Guide*. Refer to “[Getting Help](#)” in **About This Guide** for information on obtaining this document.
4. If a link is not established, contact Enterasys Networks. Refer to “[Getting Help](#)” in **About This Guide** for details.
5. Repeat all the steps above until all connections have been made.

3.5.2 Connecting UTP Cables to the 5H153-50

When facing the front panel of the 5H153-50, the RJ21 connectors from top to bottom represent Ethernet/Fast Ethernet segments 1 through 12, segments 13 through 24, 25 through 36, and 37 through 48, respectively.

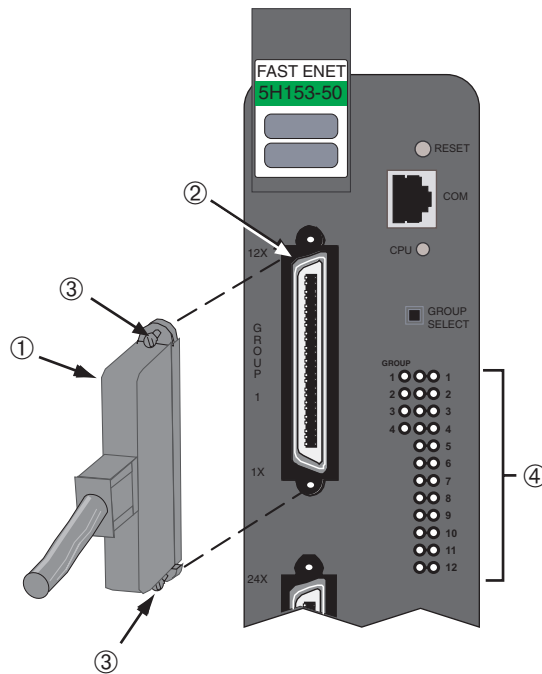
To connect a UTP segment to the 5H153-50, proceed as follows:

1. Ensure that the device connected to the other end of the segment is powered ON.
2. If using an RJ21 straight connector ①, refer to [Figure 3-10](#) and proceed as follows:
 - a. Plug the RJ21 straight connector ① into the appropriate RJ21 port connector ②.
 - b. Tighten the two screws ③ to secure the RJ21 straight connector ① to the RJ21 port connector ②.



NOTE: The cable pinouts for a 25-pair cable (RJ21) can be found in the *Cabling Guide*. Refer to “[Related Documents](#)” in **About This Guide** for details on how to obtain this document.

- c. Proceed to [step 4](#).

Figure 3-10 Connecting a Twisted Pair Segment to the 5H153-50

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- | | |
|---------------------------|--------------------|
| ① RJ21 straight connector | ③ Retaining screws |
| ② RJ21 port connector | ④ Link LEDs |

3. If using an optional RJ21 angle adapter available from Enterasys Networks, refer to [Figure 3-11](#) and proceed as follows:
 - a. Insert the angle adapter ① into the RJ21 port connector ②.
 - b. Tighten the two screws ③ to secure the RJ21 angle adapter connector ① to the RJ21 port connector ②.

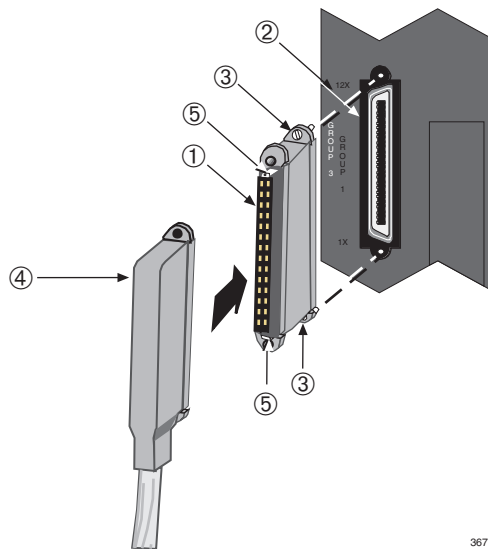
- c. Insert the RJ21 right-angled connector ④ into the RJ21 angle adapter ① until the two retaining clips ⑤ snap into place. As shown in [Figure 3-12](#), the RJ21 angle adapter allows the cables to be positioned along the front of the device when using a right-angle RJ21 connector.



NOTE: The cable pinouts for a 25-pair cable (RJ21) can be found in the *Cabling Guide*. Refer to “[Related Documents](#)” in **About This Guide** for details on how to obtain this document.

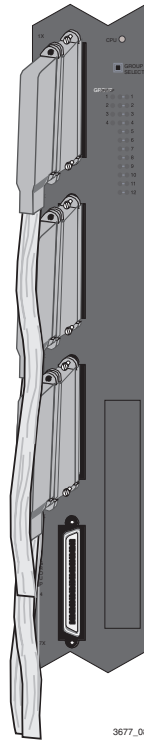
- d. Proceed to [step 4](#).

Figure 3-11 Connection Using Optional RJ21 Angle Adapter



36771_07

-
- | | |
|-----------------------|-------------------------------|
| ① RJ21 angle adapter | ④ RJ21 right-angled connector |
| ② RJ21 port connector | ⑤ Retaining clips |
| ③ Retaining screws | |
-

Figure 3-12 Example of Cable Placement When Using Optional RJ21 Angle Adapters

4. Verify that a link exists by checking that the port **Link** LEDs ④ shown in [Figure 3-10](#) are flashing amber, blinking green, or solid green. If any of the **Link** LEDs are off, perform the following steps until they are on:
 - a. Verify that the device at the other end of the twisted pair segment is ON and connected to the segment.
 - b. Verify that the RJ21 connectors on the twisted pair segment have the proper pinouts and check the cable for continuity.
 - c. Check that the twisted pair connection meets the specifications in the *Cabling Guide*.

If a link is not established, contact Enterasys Networks. Refer to “[Getting Help](#)” in **About This Guide** for details.

5. Repeat all the steps above until all RJ21 connections are made.

3.6 CONNECTING FIBER OPTIC CABLES TO GPIMs

The following sections describe how to make the SC single-mode and multimode fiber optic cable connections to GPIMs.

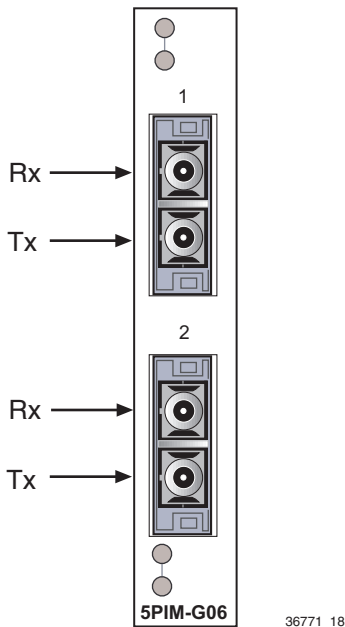
3.6.1 SC Fiber Optic Connections to Network

The GPIM-01, GPIM-08, and the GPIM-09 have an SC style connector used to connect to the Gigabit Ethernet network. Enterasys Networks offers fiber optic cables that have SC style connectors. These connectors are keyed to ensure proper crossover of the transmit TX and receive RX fibers as shown in [Figure 3-13](#).



NOTE: An odd number of crossovers (preferably one) must be maintained between like devices so that the transmit port of one device is connected to the receive port of the other device and vice versa.

Figure 3-13 Fiber Port Designations



Different size and wavelength fiber optic cables are used for different applications. The GPIM-08 and the GPIM-09 typically have a blue connector to indicate the long wavelength transceiver. The GPIM-01 connector is typically black or beige, to indicate short wave length applications. Check the fiber specifications in [Appendix C](#) for each GPIM carefully before connecting a GPIM to the network.

Since the GPIM-01, GPIM-08, and GPIM-09 interfaces have the SC fiber connector, the directions for connectivity are the same, except when the GPIM-09 is connected to multimode fiber. Refer to [Section 3.6.2](#) before connecting the GPIM-09 to multimode fiber.

3.6.2 GPIM-09 Connection Using Multimode Cable

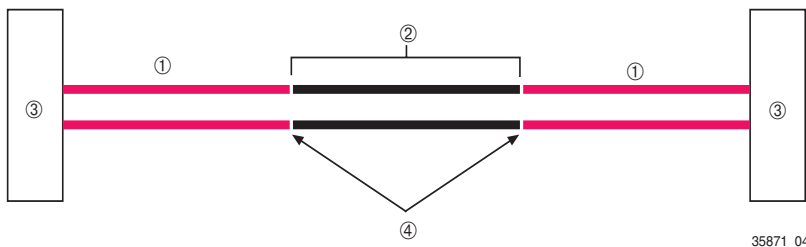


NOTE: When using multimode fiber optic cable for the GPIM-09 (long wavelength transceiver), connect the Launch Mode Conditioning cable as detailed in the following procedure. The following procedure is not needed when connecting single-mode fiber optic cable to the GPIM-09. Launch Mode Conditioning cables are available from Enterasys Networks.

To connect the GPIM-09 to the network using multimode fiber, refer to [Figure 3-14](#) and proceed as follows:

1. Connect the Launch Mode Conditioning cable ① to each end of the multimode fiber optic cables ② before connecting the Long Wavelength Gigabit fiber optic device ③ (e.g., 5PIM module with a GPIM-09) to the multimode fiber optic cabling.

Figure 3-14 GPIM-09 Launch Mode Conditioning Cable Connection



① Launch mode conditioning cable

② Multimode fiber optic Cables

③ Long wavelength gigabit fiber optic device

④ Ends of the multimode fiber optic cables and launch mode conditioning cables connections

2. Once the Launch Mode Conditioning cable ① is connected to the ends of the multimode fiber optic cable ④, proceed to [Section 3.6.3](#) to complete the installation to the GPIM-09 device.

3.6.3 Network Connection Using Fiber Optic Cable

To connect the module using fiber optic cable to the network, perform the following steps:



NOTE: If connecting the module with a GPIM-09 to the network using multimode fiber optic cable, refer to [Section 3.6.2](#) before following this procedure.

1. Remove any protective covers from the fiber optic ports and from the ends of the connectors.



WARNING: The GPIM-08 and GPIM-09 use Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.



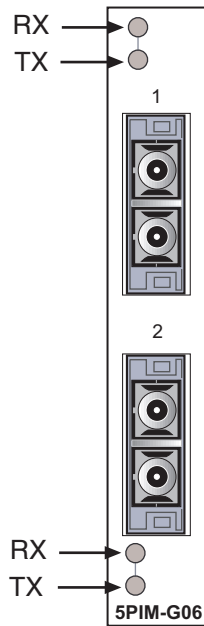
NOTE: To prevent contamination, leave the protective covers in place when the connectors or ports are not in use.

Do not touch the ends of the fiber optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of the ends causes problems in data transmission.

If the ends become contaminated, blow the surfaces clean with a canned duster. A fiber port cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.

2. Refer to [Figure 3-15](#) and insert one end of the SC cable connector ①, key side down ②, into the GPIM-01, GPIM-08, or GPIM-09 ③. Ensure that the appropriate cable is used for the application of the GPIM. Refer to [Appendix C](#) for the appropriate GPIM and for the fiber optic cable to be used in the installation.

Figure 3-16 Fiber Port LED Designations



36771_20

If a link has not been established, refer to [Chapter 4](#) for LED troubleshooting details. Refer to “[Getting Help](#)” in **About This Guide** for details on contacting Enterasys Networks if a problem persists.

3.7 COMPLETING THE INSTALLATION

After installing the module and making the connections to the network, proceed as follows:

1. If the chassis is installed in a rack that has strain-relief brackets, secure the cables by running the cables along the strain-relief bracket and tying them to the bracket using cable ties.
2. The module is now ready to be configured through Local Management. Refer to the *MATRIX E5 Series Modules Local Management User's Guide* for information on how to access and use Local Management. For details on how to get manuals, refer to the “[Related Documents](#)” section in **About This Guide**.

Troubleshooting

This chapter provides information concerning the following:

- Using LANVIEW ([Section 4.1](#))
- Troubleshooting Checklist ([Section 4.2](#))
- Using the RESET Button ([Section 4.3](#))

4.1 USING LANVIEW

The modules use a built-in visual diagnostic and status monitoring system called LANVIEW. The LANVIEW LEDs ([Figure 4-1](#)) allow quick observation of the network status to aid in diagnosing network problems.

Viewing Receive and Transmit Activity

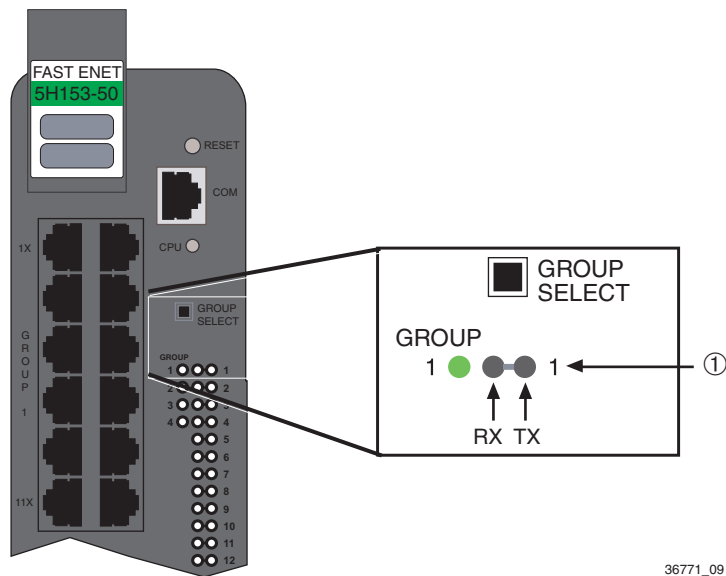
Only one group of segments may be viewed at a time.

To view the receive and transmit activity on a group of segments, press the GROUP SELECT button to step to the group of interest (Groups 1 through 4). Each time the GROUP SELECT button is pressed, the GROUP LED lights up in sequence, indicating which Group is selected. [Figure 4-1](#) shows an example ① of Port 1 selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.

Fast Ethernet Speed LED

This LED indicates whether the port is in 10 Mbps or 100 Mbps Ethernet. When the LED is off, the port is functioning at 10 Mbps. When the LED is on solid green, the speed is 100 Mbps.

Figure 4-1 LANVIEW LEDs (both modules)



36771_09

① Port 1, Group 1 LEDs

Table 4-1 describes the LED indications and provides recommended actions as appropriate. If the recommended actions suggest contacting Enterasys Networks for technical support, refer to “Getting Help” in About This Guide for directions.



NOTE: The terms **flashing**, **blinking**, and **solid** used in Table 4-1 indicate the following:

Flashing indicates an LED is flashing randomly.

Blinking indicates an LED is flashing at a steady rate (approximately 50% on, 50% off).

Solid indicates a steady LED light. No pulsing.

Table 4-1 LANVIEW LEDs

LED	Color	State	Recommended Action
CPU	Off	Power off.	Ensure chassis has adequate power.
	Red	Solid. Hardware failure has occurred.	If the LED remains red for several minutes, contact Enterasys Networks for technical support.
	Amber	Blinking. Image is being loaded from Flash.	None.
		Solid. Boot PROM diagnostics are running.	If the LED remains amber for more than several minutes, contact Enterasys Networks for technical support.
	Green	Solid. Unit is functional.	None.
	Amber and Green	Booting. Blinks amber and green while image is loading.	None.
RX (Receive)	Off	No link. No activity or port in standby. Port enabled or disabled.	None.
	Green	Solid. Link, port enabled, no activity.	None.
		Blinking. Link, port disabled.	None.
	Amber	Flashing. Link, port enabled, activity.	None.
	Red	Solid. Diagnostic failure.	Contact Enterasys Networks for assistance.

Table 4-1 LANVIEW LEDs (Continued)

LED	Color	State	Recommended Action
TX (Transmit)	Off	Port enabled, and no activity. Should flash green every two seconds indicating BPDUs being sent if STA is enabled and there is a valid link.	<ol style="list-style-type: none"> 1. Ensure that the STA is enabled and that there is a valid link. 2. Contact Enterasys Networks for technical support.
	Green	Flashing. Indicates activity. Rate indicates data rate.	None.
	Amber	Blinking. Port may be disabled due to Spanning Tree.	<ol style="list-style-type: none"> 1. Ensure that the port is not disabled. 2. Contact Enterasys Networks for technical support.
	Red	Flashing. Indicates collision rate.	None, unless there is a high amount of activity. In this case, check for network configuration problems or a defective device.
		Solid. Diagnostic failure.	Contact Enterasys Networks for technical support.
Speed	Off	Port is in 10 Mbps (10BASE-T).	None.
	Green	Solid. Port is in 100 Mbps (100BASE-TX).	None.

4.2 TROUBLESHOOTING CHECKLIST

If the module is not working properly, refer to [Table 4-2](#) for a checklist of problems, possible causes, and recommended actions to resolve the problem.

Table 4-2 Troubleshooting Checklist

Problem	Possible Cause	Recommended Action
All LEDs are OFF.	Loss of power.	Ensure that the module was installed properly according to the installation instructions in Chapter 3 , and that the host chassis is powered properly.
No Local Management Password screen.	Autobaud is enabled, but the baud rate has not yet been detected.	Press ENTER (RETURN) (may take up to four times).
	Incorrect terminal setup.	Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for proper setup procedures.
	Improper console cable pinouts.	Refer to Appendix A for proper COM port pinouts.
	Corrupt firmware image, or hardware fault.	If possible, attempt to download the image to the module again. Refer to Section B.2 for instructions to clear NVRAM.
Cannot navigate beyond Password screen.	Improper Community Names Table.	<ol style="list-style-type: none"> 1. Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for the Community Names Table setup. 2. If the Community Names have been forgotten, refer to Section B.2 for instructions on how to set the mode switch to reset the Community Names to their default values.

Table 4-2 Troubleshooting Checklist (Continued)

Problem	Possible Cause	Recommended Action
Cannot contact the module through in-band management.	IP address not assigned.	Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for the IP address assignment procedure.
	Port is disabled.	Enable port. Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for instructions to enable/disable ports.
	No link to device.	<ol style="list-style-type: none"> 1. Verify that all network connections between the network management station and the module are valid and operating. 2. If the problem continues, contact Enterasys Networks for technical support.
Port(s) goes into standby for no apparent reason.	Loop condition detected.	<ol style="list-style-type: none"> 1. Verify that Spanning Tree is enabled. Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for the instructions to set the type of STA. 2. Review the network design and delete unnecessary loops. 3. If the problem continues, contact Enterasys Networks for technical support.
User parameters (IP address, Device and Module name, etc.) were lost when the module power was cycled or the front panel RESET button was pressed.	<ol style="list-style-type: none"> 1. Position of Mode switch (7), NVRAM Reset, was changed sometime before either cycling power or pressing the RESET button, causing the user-entered parameters to reset to factory default settings. 2. Clear NVRAM was set through Local Management. 	<ol style="list-style-type: none"> 1. Reenter the lost parameters as necessary. Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for the instructions to configure the device through Local Management. 2. If the problem continues, contact Enterasys Networks for technical support.

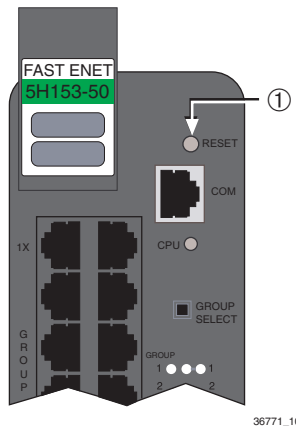
4.3 USING THE RESET BUTTON

The RESET button shown in [Figure 4-2](#) resets and re-initializes the module.



CAUTION: Pressing the RESET button resets the device, and all current switching being performed by the module is halted. A network downtime of up to two minutes will result from this action for any devices connected to the module.

Figure 4-2 RESET Button (same on both modules)



36771_10

① Reset button

To reset the module processor, press and release the RESET button. The module goes through a reset process for approximately 60 seconds. Additional downtime may result as the module reenters the network.



NOTE: Pressing the RESET button while the module is already in reset mode is not recommended. If the RESET button is pressed while the module is in reset mode, the module will enter an extended diagnostic procedure, which is unnecessary for normal operation. This extended diagnostic procedure takes longer than one minute to complete.

Specifications

This appendix provides information about the following:

- Specifications for 5H152-50 and 5H153-50 modules ([Section A.1](#))
- Optional 5PIM input/output port specifications ([Section A.2.1](#))
- Optional GPIM input/output port specifications ([Section A.3](#))
- COM port pinout assignments ([Section A.4](#))
- Regulatory compliance ([Section A.5](#))

Enterasys Networks reserves the right to change the specifications at any time without notice.

A.1 MODULE SPECIFICATIONS (5H152-50 AND 5H153-50)

Processor:	Motorola 850 PPC
Dynamic Random Access Memory (DRAM):	8 MB
FLASH Memory:	2 MB

A.1.1 Physical Properties

Dimensions:	46.43 H x 6.05 W x 29.51 D (cm) 18.28 H x 2.38 W x 11.62 D (in)
Approximate Weight (Unit):	2.04 kg (4.5 lb)
MTBF (Predicted):	
5H152-50	289,125 hours
5H153-50	275,646 hours

A.1.2 Environmental Requirements

Operating Temperature:	5°C to 40°C (41°F to 104°F)
Storage Temperature:	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity:	5% to 90% (non-condensing)

A.1.3 Input/Output Ports

5H152-50:

Ports 1 through 48:	Fast Ethernet 10/100 Mbps (10BASE-T and 100BASE-TX compliant) with 48 RJ45 connectors.
Ports 49 and 50	Optional Gigabit Ethernet Port Interface Modules (5PIMs) for 1 Gbps uplinks.

5H153-50:

Ports 1 through 48:	Fast Ethernet 10/100 Mbps (10BASE-T and 100BASE-TX compliant) with 4 RJ21 connectors (12 ports per connector).
Ports 49 and 50	Optional Gigabit Ethernet Port Interface Modules (5PIMs) for 1 Gbps uplinks.

A.2 5PIM SPECIFICATIONS

A.2.1 Input/Output Ports (5PIM-G02 and 5PIM-G06 Options)

5PIM-G02:

Ports 1 and 2:	Fast Ethernet 10/100 Mbps (10BASE-T and 100BASE-TX compliant) with two fixed Gigabit Ethernet RJ45 connectors.
----------------	--

5PIM-G06:

Ports 1 and 2:	Two slots that can support two, or a combination of optional GPIM-01, GPIM-08, and GPIM-09 interface modules for gigabit fiber optic SC connections.
----------------	--

A.2.2 5PIM Physical Properties

Dimensions:	2.06 H x 13.41 W x 17.75 D (cm) 0.81 H x 5.28 W x 6.99 D (in)
Approximate Weight (Unit):	0.45 kg (1.0 lb)
MTBF (Predicted):	
5PIM-02	5,354,294 hours
5PIM-06	5,069,708 hours

A.3 INPUT/OUTPUT PORTS (GPIM OPTIONS)



NOTE: For the GPIM-01, GPIM-08, and GPIM-09 fiber optic port transmission and operating range specifications, refer to [Appendix C](#).

GPIM-01	Provides one, 1000BASE-SX compliant SC fiber optic connection. Supports multimode fiber optic cabling.
GPIM-08	Provides one, 1000BASE-SX compliant SC fiber optic connection. Supports single-mode fiber optic cabling.
GPIM-09	Provides one, 1000BASE-SX/LX compliant SC fiber optic connection. Supports single or multimode fiber optic cabling.

A.4 COM PORT PINOUT ASSIGNMENTS

The COM port is a serial communications port that supports Local Management. [Table A-1](#) shows the COM port pin assignments.

Table A-1 COM Port Pin Assignments

Pin	Signal Name	Input/Output
1	Transmit Data (XMT)	Output
2	Data Carrier Detect (DCD)	Output
3	Data Set Ready (DSR)	Input
4	Receive Data (RCV)	Input
5	Signal Ground (GND)	NA
6	Data Terminal Ready (DTR)	Output
7	Request to Send (RTS)	Input
8	Clear to Send (CTS)	NA

A.5 REGULATORY COMPLIANCE

The equipment described in this document meets the following safety and electromagnetic compatibility (EMC) requirements:

Safety:	UL 1950, CSA C22.2 No. 950, 73/23/EEC, EN 60950, IEC 950, EN 60825
Electromagnetic Compatibility (EMC):	FCC Part 15, CSA C108.8, 89/336/EEC, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS 3548, VCCI V-3

Mode Switch Bank Settings

This appendix covers the following items:

- Required tools ([Section B.1](#))
- Locations, functions, and settings for the mode switches ([Section B.2](#))

B.1 REQUIRED TOOLS

Use the following tools to perform the procedures provided in this appendix:

- Antistatic wrist strap
- Phillips screwdriver



CAUTION: An antistatic wrist strap is required (provided with the module) to perform the procedures in this appendix. Use the antistatic wrist strap when performing any of the procedures in this appendix to minimize ESD damage to the devices involved.

B.2 SETTING THE MODE SWITCHES



CAUTION: Read the appropriate sections to be fully aware of the consequences when changing switch settings.

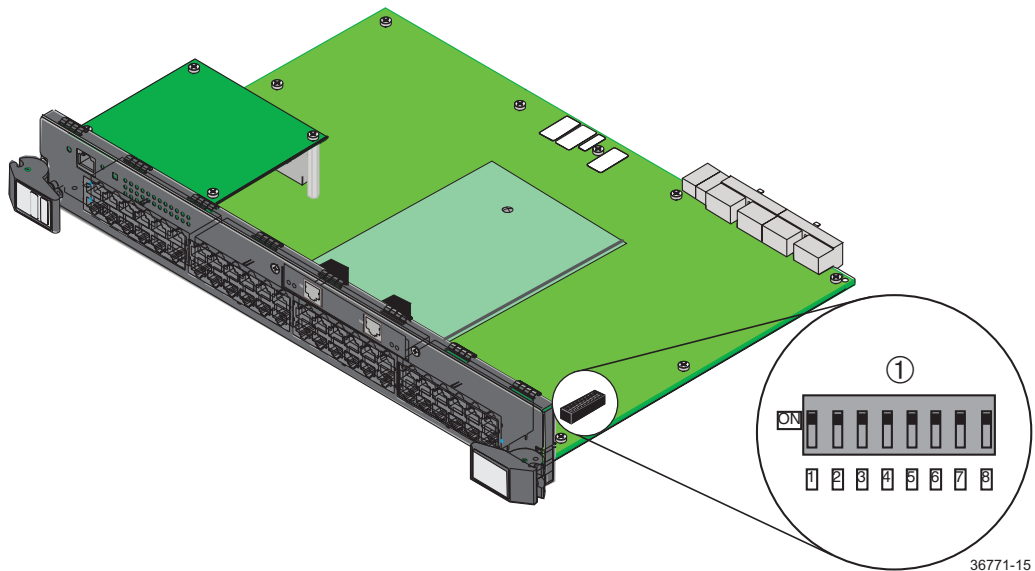
Only qualified personnel should change switch settings.

Figure B-1 shows the location of the mode switches and the switch settings for normal operation. These switches are set at the factory and rarely need to be changed.

Switch definitions and positions are as follows:

- Switches 1 through 4 – For Enterasys Networks use only.
- Switch 5 – If the boot up diagnostics have been disabled, changing the position of this switch will enable them.

Figure B-1 Mode Switch Location



36771-15

① Mode switch bank

- Switch 6 – No function.
- Switch 7 – Clear NVRAM. Changing the position of this switch resets NVRAM on the next power-up of the device. All user-entered parameters, such as the IP address, device names, etc., are reset to the factory default settings. Once the module resets, you can either use the factory default settings or reenter your own parameters.
- Switch 8 – Reset Password/Community Names. Changing the position of this switch clears user-entered passwords stored in NVRAM, and restores the factory default passwords on the next power-up of the device. Once the module resets, you can either use the factory default settings or reenter your own passwords.



NOTE: Do not change the position of Switch 8 unless it is necessary to reset the super-user configured passwords to their factory default settings.

GPIM Specifications

The optional 5PIM-G06 can support any combination of two GPIMs (GPIM-01, GPIM-08, and GPIM-09). This appendix lists the input/output port specifications and regulatory requirements for the GPIMs and the media they use. Enterasys Networks reserves the right to change these specifications at any time without notice.

C.1 INPUT/OUTPUT PORTS (GPIM OPTIONS)

The following list indicates the number of ports, standards compliance, type of cable connector, and supported fiber optic cabling for each GPIM.



WARNING: The GPIM-08 and GPIM-09 use Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

GPIM-01	Provides one, 1000BASE-SX compliant SC fiber optic connection. Supports multimode fiber optic cabling.
GPIM-08	Provides one, 1000BASE-SX compliant SC fiber optic connection. Supports single-mode fiber optic cabling.
GPIM-09	Provides one, 1000BASE-SX/LX compliant SC fiber optic connection. Supports single or multimode fiber optic cabling.

C.2 GIGABIT ETHERNET SPECIFICATIONS

The following specifications for the GPIMs meet or exceed the IEEE 802.3z specification.

C.2.1 GPIM-01 Specifications (1000BASE-SX)

Table C-1 GPIM-01 Optical Specifications

Item	62.5 μm MMF	50 μm MMF
Transmit Power (minimum)	-9.5 dBm	-9.5 dBm
Receive Sensitivity	-17 dBm	-17 dBm
Link Power Budget	7.5 dBm	7.5 dBm

Table C-2 GPIM-01 Operating Range

Item	Modal Bandwidth @ 850 nm	Range
62.5 μm MMF	160 MHz/km	2-220 Meters
62.5 μm MMF	200 MHz/km	2-275 Meters
50 μm MMF	400 MHz/km	2-500 Meters
50 μm MMF	500 MHz/km	2-550 Meters

C.2.2 GPIM-08 Specifications (1000BASE-SX)

Table C-3 GPIM-08 Optical Specifications

Item	10 μm SMF
Transmit Power (minimum)	0 dBm
Receive Sensitivity	-22 dBm
Link Power Budget	22 dB

Table C-4 GPIM-08 Operating Range

Item	Range
10 μ m SMF (1550 nm Wavelength)	70 km

C.2.3 GPIM-09 Specifications (1000BASE-LX)

Table C-5 GPIM-09 Optical Specifications

Item	62.5 μ m MMF	50 μ m MMF	10 μ m MMF
Transmit Power (minimum)	-11.5 dBm	-11.5 dBm	-9.5 dBm
Receive Sensitivity	-20 dBm	-20 dBm	-20 dBm
Link Power Budget	8.5 dBm	8.5 dBm	10.5 dBm

Table C-6 GPIM-09 Operating Range

Item	Modal Bandwidth @ 1300 nm	Range
62.5 μ m MMF	500 MHz/km	2-550 Meters*
50 μ m MMF	400 MHz/km	2-550 Meters*
50 μ m MMF	500 MHz/km	2-550 Meters*
10 μ m SMF	N/A	2-10,000 Meters

* To obtain the distance of 550 m for the GPIM-09 using multimode fiber, Launch Mode Conditioning cable must be used. Refer to [Section 3.6.2](#) for details.

C.3 PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

Physical

Dimensions:	1.2 H x 3.4 W x 6.5 D (cm) 0.47 H x 1.34 W x 2.56 D (in)
Weight:	25 g (0.88 oz)

Environmental

Operating Temperature:	5°C to 40°C (41°F to 104°F)
Storage Temperature:	-30°C to 90°C (-22°F to 194°F)
Operating Humidity:	5% to 90% (non-condensing)

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 - requirements for [2-2](#)
- 1000BASE-T network connections
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- 100BASE-TX
 - requirements for [2-2](#)
- 10BASE-T
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